UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region I - EPA New England

Audit Report, Evaluation of Rhode Island Department of Transportation Stormwater Program.

Author: Andrew Spejewski

I. Facility Information

A. Facility Name: Rhode Island Department of Transportation
B. Facility Location: Two Capitol Hill, Providence, RI 02903
C. Facility Contact: Peter Healy
E. Permit #: RI general permit for MS4

II. Background Information

A. Dates of audit: February 17 and 18, 2011
B. Weather Conditions: Dry
C. US EPA Representative(s): Andrew Spejewski, Alex Rosenberg
D. State/Local Representative(s): None
E. Previous Enforcement Actions: None known from EPA.

III Purpose of Inspection

The audit examined compliance with the RIPDES general permit for discharges from small or medium Municipal Separate Storm Sewer Systems ("MS4 permit").

IV Facility Description

The RI DOT is a state agency primarily responsible for building and maintaining state highways and roads in the state. It covers about 3300 miles of roads and has 27 maintenance facilities as well as offices in Providence.

V. Inspection

Audit Procedure

On February 10, 2010, Mr. Spejewski contacted RI DOT to arrange the audit. After discussion, the audit was set for February 17 and 18.

On Feb 17, Mr. Spejewski arrived with Mr. Rosenberg at RI DOT offices at about 8:55, and met Ms. Hamel. Mr. Spejewski presented his credentials, and the group proceeded to a conference room for an opening conference.

Present were:
Alison Hamel, MS4 coordinator
Emilie Holland, head of the Natural Resources Division
Michael Dahlquist, member of the Natural Resources Division
Joseph Baker, Deputy Administrator of Maintenance
Peter Healy, supervisor of Environment and Capital Projects, including Natural Resource Division

Kazem Farhoumand, Chief Engingeer of Design and Construction Office
Frank Corrao III, Deputy Chief Engineer in charge of the Construction Management Section.

After this opening conference, Mr. Spejewski, Mr. Rosenber, Ms. Hamel, and Ms. Holland proceeded to the RI DOT Natural Resources section offices for interviews.

After lunch, the group went to the Sakonnet River Bridge construction site to examine RI DOT oversight of construction activities. A separate report covers the observations at the inspection.

On the morning of Feb 19, Mr. Spejewski and Mr. Rosenberg met at the Highway Maintenance Division headquarters with Paul Annarummo, Administrator of the RI DOT Highway and Bridge Maintenance Division, Joe Baker, Deputy Administrator, Emilie Holland and Allison Hamel.

After interviewing Maintenance Department management, the group toured several facilities: the Maintenance Headquarters facilty, the Jefferson Boulevard salt storage facility, and the Midstate Maintenance yard. Reports are separate documents.

Following a lunch break, Mr. Spejewski, Mr. Rosenberg, Ms. Holland, and Ms. Hamel met briefly at the RI DOT offices in Providence, then met for a closing conference that also included Mr. Healy, and Michael Lewis, Director of the RI DOT.

Finally, on March 11, 2011, Mr. Spejewski performed inspections at the Belleville, Lincoln, and Smithfield RI DOT maintenance facilities, and the Wickford Junction Commuter Rail Construction site (a site operated by private contractors with RI DOT funding).

DOT General

DOT Organization

According to statements by personnel and the DOT website, the RI DOT employs 772 people. The DOT's operations are primarily in two groups: the Infrastructure Development Division and the Maintenance Division. The Maintenance Division does cleaning, plowing, and routine maintenance. The Infrastructure Development Division includes Sections for Design, Materials & Research, Construction Management, and Environment and Capital Projects. The Natural Resources Division is part of the Environment and Capital Projects Section

The RI DOT owns and maintains both interstates and state-owned surface roads, approximately 3300 lane miles of highway, of which 1100 miles are limited access facilities. There are a few small sections of roads that are owned by DOT but maintained by towns (for instance, short sections where a state road has been relocated, but the old road was left in use).

The interstate rest area facilities in the state are owned by the RI Department of Economic Development, but essentially maintained by RI DOT (personnel present thought DOT probably provided the design work for the facilities). Additionally Park and Ride lots are owned by RI Public Transit, but are plowed by RI DOT (if maintenance was required, it was thought DOT would probably provide it though no one was aware of any formal arrangement).
DOT personnel stated that fueling facilities were all owned and operated by the RI Department of Administration. [However fuel tanks were in place at a RI DOT facility observed during the

audit; the relationship between RI DOT and RI DOA is not clear].

Several times during the opening interview, RI DOT personnel stated that RI DOT was possibly not meeting the exact requirements of permits, but was doing all that could be expected given the available resources.

MS4 Program General

[Most of the following information came from meeting on the morning of the 17th; some came during a brief meeting on the afternoon of the 18th with Natural Resources Staff]

Organization

The MS4 program is essentially run by Allison Hamel, who is part of the Natural Resources group. The Natural Resources group consists of five people. According to personnel statements the group is responsible for all environmental issues, including design review of projects for environmental issues, hazardous material and hazardous waste compliance, state coastal zone requirements, endangered species compliance, wetlands issues, and Environmental Impact reviews. The group stated that Spill Control and Countermeasure Plans are dealt with by the Maintenance Division.

Ms. Hamel stated that she was on maternity leave for a year (approximately Aug 2009 to July 2010) and was not replaced during that time.

Formal changes to the plan must be approved by multiple levels of management. Changes affecting groups outside of the Natural Resources' chain of command are informally approved by the affected groups. Informal changes are implemented directly by Ms. Hamel.

Reports

The staff provided annual reports for calendar years 2004, 2005, 2006, 2007, 2008 and 2009. A cover sheet for the 2009 year report was provided [copy in file]. The cover sheet was dated July 8, 2010, and was stamped 'Received' July 18, 2010. Staff stated this was the acknowledgement of receipt from the RI DEM.

MS4 staff admitted that they have received multiple notifications of TMDLs from RI DEM, with the latest on Oct 12, 2010. Staff stated that they have not responded to recent TMDLs, explaining that since the permit's original term expired, they were waiting for the permit to be re-issued, planning on completely rewriting the SWMP to meet the new permit and TMDLs.

Staff stated that DOT was carrying out a program to retrofit stormwater controls (typically installing sediment-catching stormdrains and other such physical BMPs). According to staff, funding was earmarked for the retrofit project in 2002, and there is currently about $2 million in the fund (staff estimated 1-2 years of spending at current rates). Therefore staff have not needed to seek funding for retrofits.

Projects were selected based on both a URI study that examined a set of watersheds and prioritized outfalls, and on requests from DEM or the Coastal Resources Management Council.

Staff stated that a contract to monitor BMP effectiveness is now being prepared for bid.

Staff stated that construction designs (for new or re-construction) are reviewed for TSS removal. It was not clear to Mr. Spejewski whether Natural Resources staff are involved in the reviews, or the design engineers are solely responsible. Staff did not state what targets are for TSS removal, nor how the targets were set.

Education

The education and public involvement program is contracted out to a group at the University of Rhode Island. The group was funded by DOT with a $700,000+ grant, originally for three years, but the education program is still continuing.

The primary targets of the education program are DOT and municipal employees. Staff noted that environmental groups have also attended many URI trainings and conferences.

Mr. Spejewski noted that outside of this audit the URI program has been singled out for praise by EPA staff and other environmental professionals.

IDDE

Map

Staff stated that all outfalls in the state have been observed and mapped (including more than 3800 outfalls). The last outfalls were mapped in the summer of 2010.

Mapping and observation was mostly done by summer interns; staff stated that some interns were given more responsibility that others based on full-time staff estimates of the interns' capabilities. Pipes, catchbasins, and other control structures are not part of the current map. Interconnections with other MS4s are generally not mapped; staff stated that DOT was waiting for the towns to map the interconnections.

Natural Resources staff believe that catchbasin mapping is underway, primarily in another section of DOT, and a full map including pipes and other structures may be underway. Staff stated that the state GIS coordinator, who works closely with the Natural Resources group, would know better the status of DOT's computer mapping efforts, but was not available the day of the audit.

Staff showed the computer based map on a screen, showing outfalls, and screening information linked to each outfall.

Screening

Natural Resources Staff stated that each outfall was screened during the summer in dry weather by interns. The screening was completed in summer 2010.

Staff showed a file containing screening forms filled out by the screeners [copy of one sheet is in file]. Outfalls with dry weather flow were tracked by physically moving the screening forms to different binders.

Results were later input into a computer database shown by staff: 88 outfalls had dry weather flow out of 3811 outfalls.

Staff stated that outfalls with dry weather flow were then sampled by full-time DOT employees.

Through 2008, 59 samples were taken. Staff stated that because there were very few hits with high bacteria, further samples were not taken.

Staff stated they did no screening in January -March, citing the difficulty of screening with snow and snowmelt, and a lack of resources to carry out the screening.

Staff stated they did no wet-weather sampling.

Staff stated they had few complaints of potential illicit discharges – perhaps five in the last few years. Staff stated these complaints were filed somewhere (Mr. Spejewski did not ask for the file to be produced). Staff stated DOT personnel were trained in noticing and reporting suspicious discharges, but none have been referred to the Natural Resources staff to date.

Investigations
Staff presented a written plan for IDDE inspections. The plan had a detailed sampling plan, but was very brief on exactly how post-sampling investigations would be carried out **.**
Staff stated that there was no formal tracking of IDDE investigations. Staff stated that several outfalls had been investigated but no illicit discharges found, stating that in several cases no dry weather discharge could be found on revisiting the outfall.

Maintenance/Housekeeping
The Maintenance Division does all sweeping, cleaning, plowing, shoulder maintenance, signage**,** and general maintenance. It is divided into 7 districts across the state. Each district has a central maintenance garage and several other sites for fueling, salt storage and other activities. [A list of maintenance facilities is attached. Note that the address for the Midstate facility has an incorrect town, and should read "East Greenwich"]

General Maintenance
According to personnel, DOT is currently working to put a complete catchbasin inventory in the GIS system. Aside from catchbasins, there are under 150 stormwater control devices (such as swirl chambers, detention basins, etc.). A contractor is finalizing a GIS layer covering these devices. There is no regular inspection schedule for these devices.

Complaints of potential illicit discharges would be referred to District Superintendents.

The Maintenance Division approves curb-cuts for single-family houses, but drainage tie-ins would be approved by the Design Division.

Shoulders/Medians: Both the Maintenance Division and the Natural Resources group attend the final inspection of construction projects, to ensure that shoulders have been finally stabilized.
DOT is experimenting with reduced cutting of grass in some areas.
Pesticides are only used to spray concrete to control weeds. A copy was produced of a August 2010 "Notice of Compliance" from RI DEM stating that no issues were found an inspection of the pesticide applicator [copy attached].

Sweeping
According to personnel, each district owns its own street sweepers (one vacuum sweeper in the state and the rest brush-type) and does its sweeping in-house without contractors, though occasionally all districts contribute equipment to a 'blitz' in the metro areas. There is no set schedule; sweeping begins in spring and the goal is to cover entire system each year. According to personnel, the DOT is also legislated to clean sidewalks.

Sweeping has been tracked only on daily activity logs – one log is filled out each day for each district, covering all district activities. These logs are kept in excel files, and generally not summarized.

Personnel stated that district personnel have the long-term experience and knowledge to know where hot spots are and how to cover the entire district.

Street sweepings are stored at facilities temporarily and then sent to the Central Landfill. Receipts from the landfill for sweepings were produced [copy attached].

Catchbasin Cleaning
According to Ms. Hamel, DOT recently purchased a vacuum truck for cleaning catchbasins; several clamshell cleaners were already in service.
There is no policy or schedule for cleaning catchbasins; mostly the district personnel are assumed to have the knowledge of which basins need cleaning and how often. Tracking of catchbasin cleaning is similar to sweeping: historically tracked only on daily activity logs at each district office. Ms. Hamel stated that the vacuum truck's activities are tracked on a central spreadsheet.

At the Natural Resources office, Ms. Hamel produced filled out tracking sheets for catchbasin cleaning, which tracked the individual catchbasins cleaned and any observations of needed maintenance or potential illicit discharges. It was not clear if the sheets were currently filled out for each cleaning, nor how they were transmitted to the natural resources office.

According to Ms. Hamel, Maintenance Division personnel have been trained on recognizing and reporting potential illicit connections, including a full day training in Spring of 2009.

Catchbasin sediment is treated similarly to street sweepings, and disposed of at the Central Landfill.

Plowing/Salting
RI DOT owns about 100 trucks for plowing. Up to 300 others could be hired from vendors on a storm-by-storm basis (it was estimated that contractors are used on about 2/3 of storms).

According to Mr. Baker, all 100 trucks have ground-speed controlled spreaders.
About 30 have devices that track the actual amount of salt used,
about 40 have pre-wetting tanks
no trucks have zero-velocity spreaders.

Contractors have an incentive for ground-speed controlled spreaders and pre-wetting devices, but they are not mandatory.

According to Mr. Baker, DOT just had a salt brine tank (for anti-icing) delivered.

Typically DOT uses a 2:1 salt:sand mixture, with straight salt at times. There is a low-salt area, where a 5:2 mix is used. Calcium Chloride is used for pre-wetting and magnesium chloride for anti-icing. Typical application rates for salt/sand are 250-450 pounds/mile.

According to Mr. Baker, DOT is retrofitting 40 trucks with closed-loop systems that allow better calibration of application rates, and allow tracking of actual amounts used.

DOT does not currently have any porous pavement. DOT has concern about pavement with open friction coat, believing that the pores allow brine to escape without melting ice.

Currently tracking of salt use is done only on a facility basis. The loader at each facility tracks the number of loads for each truck, however, often a single truck may load at multiple facilities (even facilities in different districts, if it is convenient). Total amounts used at each facility for three years were provided by DOT after the audit [attached].

There are 20 salt storage facilities. According to Mr. Baker, DOT is planning on building facilities to allow all salt loading to be done under cover.

Mr. Spejewski understood Mr. Baker to say that this is the first full season of a private contract to temporarily cover (e.g. with tarps) all salt piles not in permanent structures. [Note: a follow-up inspection at the Lincoln facility revealed an uncovered salt pile, with a new shed at the nearby Smithfield facility scheduled for use next year. Mr. Spejewski may have misunderstood the timing of uncovered salt pile elimination.]

Salt trucks are thoroughly washed at private facilities, though some may be hosed off at maintenance facilities.

RI DOT has a program to investigate and remediate salt contamination in drinking water wells. There are about 40-50 cases of contamination. [After the audit, DOT provided spreadsheets of salt contamination cases; they are attached]

RI DOT is aware of a study by USGS and the Providence Water Supply Board regarding the potential for salt contamination in the Scituate reservoir. DOT did not immediately have a copy.

RI DOT also reported in Dec 2009 to the state legislature on salt alternatives. A copy of the report was provided by DOT after the audit. [attached]

United States Environmental Protection Agency
Washington, D.C. 20460

Water Compliance Inspection Report

Section A: National Data System Coding (i.e., PCS)

Transaction Code	NDPES	yy/mm/dd	Inspec ion Type	Inspector	Fac Type
1 N	2	3	11 12 1 2 / 1 1 / 1 5	17 18 <	19 R 20

Inspection Type Description: Stormwater-MS4-sampling

Remarks: 21 66

Inspec ion Work Days	Facility Self-Monitoring Evaluation Rating	B1	QA	Reserved
67 1 . 0 69	70	71	72	73 74 75 80

Section B: Facility Data

Name and Location of Facility Inspected (For industrial users discharging to POTW, also include POTW name and NPDES permit number)
Outfall located at the southeast end of Sheldon Avenue, Warwick, RI, iden ified as PAWT721.
Outfall located at the south end of Shand Avenue, Warwick, RI, identified as NARR313.
Outfall located along Gordon Avenue between Hawksley Avenue and Irma Avenue, Warwick, RI, identified as NARR315.
Outfall located on the sou h side of Bay Marina in Warwick, RI, identified as NARR318.
Outfall located along Pontiac Avenue between Harris Driftwayand and Marine Drive, Cranston, RI, identified as PAWT713.
Outfall located along Central Avenue between Benefit Street and Olive Avenue in Pawtucket, RI, identified as Black788.

Entry Time/Date: 09:30AM 11/15/2012
Exit Time/Date: 13:00PM 11/15/2012
Permit Effective Date:
Permit Expiration Date:

Name(s) of On-Site Representative(s)/Title(s)/Phone and Fax Number(s)
There were no on-site representatives at the ime of the inspection.

Name, Address of responsible Official/Title/Phone and Fax Number.
Allison Hamel / Environmental Scientist / phone: (401) 222-2023 x4097

Contacted: [ ] Yes [X] No

Other Facility Data:
Receiving Water: Narragansett Bay
Greenwich Bay
Brush Neck Cove
Warwick Cove
Pawtuxet River
Ten Mile River

Section C: Areas Evaluated During Inspection (Check only those areas evaluated)

[ ] Permit	[ ] Self-Monitoring Program	[ ] Pretreatment	[X] MS4
[ ] Records/Reports	[ ] Compliance Schedules	[ ] Pollution Preven ion	
[ ] Facility Site Review	[ ] Laboratory	[X] Storm Water	
[X] Effluent/Receiving Waters	[ ] Operations & Maintenance	[ ] Combined Sewer Overflow	
[ ] Flow Measurement	[ ] Sludge Handling/Disposal	[ ] Sanitary Sewer Overflow	

Section D: Summary of Findings/Comments (Attach additional sheets of narrative and checklists as necessary)

SEV Codes	SEV Description

Name(s) and Signature(s) of Inspector(s)	Agency/Office/Phone and Fax Numbers	Date
Erin F. Trainor	US EPA / EIA / p. (617) 918-8382 / f. (617) 918-8282	11/20/2012
Signature of Management QA Reviewer	Agency/Office/Phone and Fax Numbers	Date

EPA
Region 1, New England

United States Environmental Protection Agency
Office of Environmental Measurement & Evaluation
11 Technology Drive
North Chelmsford, MA 01863-2431

Water Microbiology Laboratory Report

December 04, 2012

Erin Trainor - EIA / OEME
US EPA New England R1

Project Number: 12110028
Project: RI DOT
Analysis: Enterococcus in Water
Analyst: Nathan Raines 3rd

Date Samples Received by the Laboratory: 11/15/2012

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I method: Enterococcus by Defined Substrate, Revision #2

If you have any questions please call me at 617-918-8609.

Sincerely,

David F. McDonald
Biology Laboratory Manager

Water Microbiology Laboratory
Data Qualifier Codes

J = Estimate
H = Exceeds holding time
I = Exceeds incubation time
At = Atypical overgrowth
S = Lost sample
V = Insufficient sample volume
TNTC = Too numerous to count
MB = Media blank
+++ = Positive control
- - - = Negative control
SP = Spiked Sample
L = Estimated, result below reporting limit (RL)
ND = Not Detected, result less than RL
D = Lab Duplicate
P = Plate counts outside preferred range

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

RI DOT

Enterococcus in Water

Matrix: Water

Sample Number	Lab ID	Date of Collection:	Date of Analysis	Compound	Concentration MPN/100mL	RL MPN/100mL	Qualifier
Black 788	AB36226	11/15/12 12:30 pm	11/15/12 2:55 pm	Enterococcus in Water	ND	10	
NARR 313	AB36223	11/15/12 10:35 am	11/15/12 2:55 pm	Enterococcus in Water	**7,760**	10	
NARR 315	AB36224	11/15/12 11:00 am	11/15/12 2:55 pm	Enterococcus in Water	**185**	10	
NARR 318	AB36225	11/15/12 11:20 am	11/15/12 2:55 pm	Enterococcus in Water	ND	10	
PAWT 713	AB36221	11/15/12 9:36 am	11/15/12 2:55 pm	Enterococcus in Water	**20**	10	
PAWT 721	AB36222	11/15/12 10:00 am	11/15/12 2:55 pm	Enterococcus in Water	**10**	10	

Number of Samples: 6

EPA
Region 1, New England

United States Environmental Protection Agency
Office of Environmental Measurement & Evaluation
11 Technology Drive
North Chelmsford, MA 01863-2431

Water Microbiology Laboratory Report

December 04, 2012

Erin Trainor - EIA / OEME
US EPA New England R1

Project Number: 12110028
Project: RI DOT
Analysis: E. Coli Defined Substrate
Analyst: Nathan Raines 3rd

Date Samples Received by the Laboratory: 11/15/2012

Analytical Procedure:

All samples were received and logged in by the laboratory according to the USEPA New England Laboratory SOP for Sample Log-in.

Sample preparation and analysis was done following the EPA Region I method: Total Coliform/E. coli by Defined Substrate, Revision #2

If you have any questions please call me at 617-918-8609.

Sincerely,

David F. McDonald
Biology Laboratory Manager

Water Microbiology Laboratory
Data Qualifier Codes

J = Estimate
H = Exceeds holding time
I = Exceeds incubation time
At = Atypical overgrowth
S = Lost sample
V = Insufficient sample volume
TNTC = Too numerous to count
MB = Media blank
+++ = Positive control
- - - = Negative control
SP = Spiked Sample
L = Estimated, result below reporting limit (RL)
ND = Not Detected, result less than RL
D = Lab Duplicate
P = Plate counts outside preferred range

US ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND LABORATORY

RI DOT

E. Coli Defined Substrate

Matrix: Water

Sample Number	Lab ID	Date of Collection:	Date of Analysis	Compound	Concentration MPN/100 mL	RL MPN/100 mL	Qualifier
Black 788	AB36226	11/15/12 12:30 pm	11/15/12 2:55 pm	E. Coli Defined Substrate	**4**	4	
NARR 313	AB36223	11/15/12 10:35 am	11/15/12 2:55 pm	E. Coli Defined Substrate	**3,266**	4	
NARR 315	AB36224	11/15/12 11:00 am	11/15/12 2:55 pm	E. Coli Defined Substrate	**2,190**	4	
NARR 318	AB36225	11/15/12 11:20 am	11/15/12 2:55 pm	E. Coli Defined Substrate	**49**	4	
PAWT 713	AB36221	11/15/12 9:36 am	11/15/12 2:55 pm	E. Coli Defined Substrate	**30**	4	
PAWT 721	AB36222	11/15/12 10:00 am	11/15/12 2:55 pm	E. Coli Defined Substrate	**116**	4	

Number of Samples: 6

ENVIRONMENTAL PROTECTION AGENCY

REGION 1

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
12100028	RIDOT

SAMPLERS: *(Signature)* E. Poli

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	E. Coli	Enterococcus					REMARKS
PAWT713	11/15/12	0936		X	PAWT713	1	X	X					
PAWT721		1000			PAWT721								
NARR313		1035			NARR313								
NARR315		1100			NARR315								
NARR318		1120			NARR318								
Black788	↓	1230		↓	Black788	↓	↓	↓					

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
E. Poli	11/15/12 1445				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
		[illegible]	11/15/12 1445		

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

1- 19122

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I

DATE: November 21, 2012

SUBJ: Rhode Island Department of Transportation MS4 Inspection

FROM: Erin Trainor, Inspector

TO: File

REQUESTED BY: Andrew Spejewski (OES)

I. Background Information

A. Date, Time of inspection: Thursday, November 15, 2012, 09:30 AM

B. Weather Conditions: Overcast and cool, approximately 40-45 degrees F

C. USEPA Representatives: Erin Trainor
Andrew Spejewski

D. Site Representative: Michael P. Lewis, Director
Rhode Island Department of Transportation
Two Capitol Hill, Providence, RI 02903
Phone: (401)-222-2481

E. Address: Various locations within the State of Rhode Island

II. Purpose of Inspection

The purpose of the inspection was to identify illicit connections or illegal discharges within Rhode Island Department of Transportation (RIDOT) Separate Stormwater Sewer System (MS4) that may adversely impact the water quality in Narragansett Bay, Greenwich Bay, Brush Neck Cove, Warwick Cove, Pawtuxet River, Ten Mile River. Samples were collected from six (6) stormwater outfalls in accordance with the Environmental Investigations and Analysis (EIA) unit Stormwater Program Plan.

III. Description of Sampling Locations

- Outfall located at the southeast end of Sheldon Avenue, Warwick, RI, identified as PAWT721 (41.75417187 N, 71.41175786 W).

- Outfall located at the south end of Shand Avenue, Warwick, RI, identified as NARR313 (41.69806035 N, 71.41353098 W).
- Outfall located along Gordon Avenue between Hawksley Avenue and Irma Avenue, Warwick, RI, identified as NARR315 (41.69771105 N, 71.40507162 W).
- Outfall located on the south side of Bay Marina in Warwick, RI, identified as NARR318 (41.69775751 N, 71.38858071 W).
- Outfall located along Pontiac Avenue between Harris Driftway and Marine Drive, Cranston, RI, identified as PAWT713 (41.75962416 N, 71.44334602 W).
- Outfall located along Central Avenue between Benefit Street and Olive Avenue in Pawtucket, RI, identified as Black788 (41.69776248 N, 71.38857837 W).

IV. Inspection Observations and Findings

On Thursday, November 15, 2012, EPA inspectors Andrew Spejewski and Erin Trainor conducted an announced Compliance Sampling Inspection (CSI) of RIDOT outfalls at six (6) locations which discharge into Narragansett Bay, Greenwich Bay, Brush Neck Cove, Warwick Cove, Pawtuxet River, Ten Mile River. The inspection started in Cranston 09:30 AM. At the time of the inspection, the weather was overcast and approximately 40-45 degrees Fahrenheit. Approximately 0.15 inches of rain was recorded the day of the inspection and approximately 0.30 inches of rain was recorded in the area within 48 hours of the inspection.

All of the sampling locations described in Section III were field screened using test kits for ammonia, chlorine, and surfactants and analyzed at the EPA New England Regional Laboratory (NERL) for E.Coli, Enterococcus, and pharmaceutical and personal care products (PPCPs) including: Atenolol, Acetaminophen, Cotinine, 1,7-Dimethylxanthine, Caffeine, Carbamazepine, and Metoprolol. In-situ measurements for conductivity, salinity, and temperature were also recorded. The following tables summarize the findings. Photographs are included. Laboratory results are anticipated to be available December 2012.

End of Report

Summary of RIDOT MS4 Inspection, November 15, 2012

Sample ID	PAWT713	PAWT721	NARR313	NARR315	NARR318	BLACK788
Time	09:30	10:00	10:35	11:00	11:20	12:30
Latitude / Longitude	41.75962416 N / 71.44334602 W	41.75417187 N / 71.41175786 W	41.69806035 N / 71.41353098 W	41.69771105 N / 71.40507162 W	41.69775751 N / 71.38858071 W	41.69776248 N / 71.38857837 W
Description of Location	Outfall located along Pontiac Avenue between Harris Driftway and Marine Drive, Cranston, RI	Outfall located at the southeast end of Sheldon Avenue, Warwick, RI (in McDonalds parking lot).	Outfall located at the south end of Shand Avenue, Warwick, RI	Outfall located along Gordon Avenue between Hawksley Avenue and Irma Avenue, Warwick, RI	Outfall located on the south side of Bay Marina in Warwick, RI	Outfall located along Central Avenue between Benefit Street and Olive Avenue in Pawtucket, RI
Physical Observations	Some suds present, no odor.	Low flow, no odor.	Flow approx 2 GPM, no odor.	Flow approx 5 GPM, no odor.	Flow approx 1-2 GPM, suds present, no odor.	Low flow, no odor.
Temperature, ºC	8.3	10.5	10.1	13.6	13.8	13.8
Specific Conductivity, µS	440.3	362.5	6.49 (mS)	1,350	4,850	376.4
Salinity, ppt	0.2	0.2	3.6	0.7	2.7	0.2
Ammonia, mg/l	0	0	0	0	0.25	0
Total Chlorine, mg/l	0.02	0.01	0.09	0	0.01	0.02
Detergent, mg/l	<0.25 (0.15)	<0.25 (0.10)	1.0	0.25-0.50	0.75	0.25

NA: Not analyzed
GPM: gallons per minute

PAWT713: Outfall located along Pontiac Avenue between Harris Driftway and Marine Drive, Cranston, RI.

PAWT721: Outfall located at the southeast end of Sheldon Avenue, Warwick, RI.

NARR313: Outfall located at the south end of Shand Avenue, Warwick, RI.

NARR315: Outfall located along Gordon Avenue between Hawksley Avenue and Irma Avenue, Warwick, RI.

NARR318: Outfall located on the south side of Bay Marina in Warwick, RI.

BLACK788: Outfall located along Central Avenue between Benefit Street and Olive Avenue in Pawtucket, RI.

EPA New England Stormwater Outfall Inspection & Sampling Summary - North Providence, RI 8/16/11

Location																Coordinates		YSI Meter			Weather
Date	Town	Site Name	Time	E.coli (MPN/100ml)	Entero (MPN/100ml)	Surfactants	Chlorine	NH3 (mg/l)	PPCP ng/L							GPS North(+)	GPS West (-)	Salinity	Temp	Conductivity	
								Test St.	Atenolol	Acetaminophen	Cotinine	1,7-Dimethylxanthine	Caffeine	Carbamazepine	Metoprolol			ppt	C	µS	
5/31/12	Cranston, RI	PAWT721	8:40	8	ND	<0.25 (0.20)	0 02	0 25	16	1.9	12	2.6	36	21	NS	41.75417187	-71.41175786	0 5	15.7	988	Dry
5/31/12	Cranston, RI	PAWT713	9:15	4,479	8,664	<0.25 (0.10)	0	0	ND	ND	2	2	9.4	ND	NS	41.75962416	-71.44334602	0 2	19.7	389.1	Dry
5/31/12	Johnston RI	WOON368	10:16	343	256	<0.25	0	0	ND	ND	1 2	1.5	11	4.1	NS	41.845039	-71.50209	0 2	18	375	Dry
5/31/12	Pawtucket, RI	BLACK788	11:15	ND	ND	<0.25	0 05	0	1.2	12	1 9	23.0	110	0 66	NS	41.89030846	-71.33990401	0 2	15.4	451	Dry
11/15/12	Cranston, RI	PAWT713	9:30	30	20	<0.25 (0.15)	0 02	0	ND	1	3.4	2.2	22	ND	ND	41.75962416	-71.44334602	0 2	8.3	440.3	Slight precip <
11/15/12	Cranston RI	PAWT721	10:00	116	10	<0.25 (0.10)	0 01	0	20	8.8	19	6.5	117	2.2	3 3	41.75417187	-71.41175786	0 2	10 5	362.5	Slight precip <
11/15/12	Warwick, RI	NARR313	10:35	3,266	7,760	1.0	0 09	0	3.2	0.78	2	ND	3.9	39	4 8	41.69806035	-71.41353098	3 6	10.1	6.49 (mS)	Slight precip <
11/15/12	Warwick, RI	NARR315	11:00	2,190	185	0 25-0.5	0	0	0.97	ND	2 5	2.6	9.7	4.1	1.1	41.69771105	-71.40507162	0.7	13 6	1350	Slight precip <
11/15/12	Warwick RI	NARR318	11:20	49	ND	0.75	0 01	0 25	25	ND	3 2	3.6	12	65	12	41.69775751	-71.38858071	2.7	13 8	4850	Slight precip <
11/15/12	Pawtucket, RI	BLACK788	12:30	4	ND	0 25	0 02	0	ND	ND	ND	1.1	4.1	0 37	ND	41.89030846	-71.33990401	0 2	13 8	376.4	Slight precip <

E. coli - color key: Red ≥ 10,000 col/100ml, Orange ≥ 1260 col/100ml, Yellow ≥ 235 col/100ml, Black < 235 col/100ml
Entero - color key: Red ≥ 1000 col/100ml, Orange ≥ 350 Yellow ≥ 61 col/100ml, Black < 61 col/100ml
NH3 - color key: Red ≥ 6 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0 0 mg/L
Surfactants - color key: Red ≥ 1.0 mg/L, Orange ≥ 0.5 mg/L, Yellow ≥ 0.25 mg/L, Black < 0.25 mg/L *** may give false positive at salinity greater than 1 ppt
PPCP color key: Pink = Concentrations greater than background
Cl2 - color key: Red ≥ 1.0 mg/L, Orange ≥ 0 3 mg/L, Yellow ≥ 0.02 mg/L, Black < 0.02 mg/L

REPORTING LIMITS
E. coli = 4 MPN/100mL
Enterococcus = 10 MPN/100mL
Surfactants Field = 0.1 mg/L
Ammonia Field = 0.1 mg/L

ND – not detected above the associated detection limit
NA – not applicable (analyte not tested for at that site at this time)
(~) – data reported as estimate